

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
United States Patent and Trademark  
Office  
Box PCT  
Washington, D.C.20231  
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 18 October 2000 (18.10.00)	
<b>International application No.</b> PCT/NO00/00076	<b>Applicant's or agent's file reference</b> P 8333
<b>International filing date (day/month/year)</b> 02 March 2000 (02.03.00)	<b>Priority date (day/month/year)</b> 15 March 1999 (15.03.99)
<b>Applicant</b> VAAGE, Joar	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
13 September 2000 (13.09.00)

☐ in a notice effecting later election filed with the International Bureau on:  
\_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer R. E. Stoffel</p> <p>Telephone No.: (41-22) 338.83.38</p>
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## PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

HÅMSØ, Eivind  
Håmsø Patentbyrå Ans  
Jostein Soppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

<b>Date of mailing</b> (day/month/year) 23 January 2001 (23.01.01)	<b>IMPORTANT NOTIFICATION</b>
<b>Applicant's or agent's file reference</b> P 8333	
<b>International application No.</b> PCT/NO00/00076	<b>International filing date</b> (day/month/year) 02 March 2000 (02.03.00)

1. The following indications appeared on record concerning:	
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address DIMENSION TECHNOLOGIES AS Vassbotnen 15 N-4313 Sandnes Norway	State of Nationality NO
	State of Residence NO
	Telephone No.
	Facsimile No.
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input checked="" type="checkbox"/> the person	<input type="checkbox"/> the name <input type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address CYVIZ AS Forus Atrium N-4313 Sandnes Norway	State of Nationality NO
	State of Residence NO
	Telephone No.
	Facsimile No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland	<b>Authorized officer</b> S. De Michiel
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

## PATENT COOPERATION TREATY

15. -5- 2000

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF RECEIPT OF  
RECORD COPY

(PCT Rule 24.2(a))

To:

HÅMSO, Eivind  
Håmsø Patentbyrå Ans  
Jostein Soppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

Date of mailing (day/month/year) 02 May 2000 (02.05.00)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference P 8333	International application No. PCT/NO00/00076

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

DIMENSION TECHNOLOGIES AS (for all designated States except US)  
VAAGE, Joar (for US)

International filing date : 02 March 2000 (02.03.00)

Priority date(s) claimed : 15 March 1999 (15.03.99)

Date of receipt of the record copy  
by the International Bureau : 10 April 2000 (10.04.00)

List of designated Offices :

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

OA : BF, BJ, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

National : AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB,  
GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,  
MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA,  
ZW

## ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

☒ time limits for entry into the national phase

☐ confirmation of precautionary designations

☐ requirements regarding priority documents

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer:  S. De Michiel
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

## PATENT COOPERATION TREATY

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING  
SUBMISSION OR TRANSMITTAL  
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

HÅMSO, Eivind  
Håmsø Patentbyrå Ans  
Jostein Soppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

Date of mailing (day/month/year) 02 May 2000 (02.05.00)	
Applicant's or agent's file reference P 8333	IMPORTANT NOTIFICATION
International application No. PCT/NO00/00076	International filing date (day/month/year) 02 March 2000 (02.03.00)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 15 March 1999 (15.03.99)
Applicant DIMENSION TECHNOLOGIES AS et al	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(\*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

<u>Priority date</u>	<u>Priority application No.</u>	<u>Country or regional Office or PCT receiving Office</u>	<u>Date of receipt of priority document</u>
15 Marc 1999 (15.03.99)	19991265	NO	10 Apri 2000 (10.04.00)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 740.14.35	Authorized officer S. De Michiel Telephone No. (41-22) 338.83.38
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## PATENT COOPERATION TREATY

30. -1- 2001

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING  
OF A CHANGE(PCT Rule 92bis.1 and  
Administrative Instructions, Section 422)

To:

HÅMSØ, Eivind  
Håmsø Patentbyrå Ans  
Jostein Sjøppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

Date of mailing (day/month/year) 23 January 2001 (23.01.01)	<b>IMPORTANT NOTIFICATION</b>
Applicant's or agent's file reference P 8333	
International application No. PCT/NO00/00076	International filing date (day/month/year) 02 March 2000 (02.03.00)

## 1. The following indications appeared on record concerning:

☒ the applicant      ☐ the inventor      ☐ the agent      ☐ the common representative

Name and Address DIMENSION TECHNOLOGIES AS Vassbotnen 15 N-4313 Sandnes Norway	State of Nationality NO	State of Residence NO
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☒ the person      ☐ the name      ☐ the address      ☐ the nationality      ☐ the residence

Name and Address CYVIZ AS Forus Atrium N-4313 Sandnes Norway	State of Nationality NO	State of Residence NO
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	

## 3. Further observations, if necessary:

## 4. A copy of this notification has been sent to:

<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer S. De Michiel Telephone No.: (41-22) 338.83.38
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-2. -10- 2000

## PCT

NOTICE INFORMING THE APPLICANT OF THE  
COMMUNICATION OF THE INTERNATIONAL  
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

From the INTERNATIONAL BUREAU

To:  
HÅMSØ, Eivind  
Håmsø Patentbyrå Ans  
Jostein Soppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

Date of mailing (day/month/year) 21 September 2000 (21.09.00)		IMPORTANT NOTICE	
Applicant's or agent's file reference P 8333			
International application No. PCT/NO00/00076	International filing date (day/month/year) 02 March 2000 (02.03.00)	Priority date (day/month/year) 15 March 1999 (15.03.99)	
Applicant DIMENSION TECHNOLOGIES AS et al			

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:  
AU,KP,KR,US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE,AL,AM,AP,AT,AZ,BA,BB,BG,BR,BY,CA,CH,CN,CR,CU,CZ,DE,DK,DM,EA,EE,EP,ES,FI,GB,GD,  
GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MA,MD,MG,MK,MN,MW,MX,  
NO,NZ,OA,PL,PT,RO,RU,SD,SE,SG,SI,SK,SL,TJ,TM,TR,TT,TZ,UA,UG,UZ,VN,YU,ZA,ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on  
21 September 2000 (21.09.00) under No. WO 00/55687

**REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)**

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, a demand for international preliminary examination must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

**REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))**

If the applicant wishes to proceed with the international application in the national phase, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer  J. Zahra
Facsimile No. (41-22) 740.14.35	Telephone No. (41-22) 338.83.38

**NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF  
THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES**

<b>Date of mailing (day/month/year)</b> 21 September 2000 (21.09.00)	<b>IMPORTANT NOTICE</b>
<b>Applicant's or agent's file reference</b> P 8333	<b>International application No.</b> PCT/NO00/00076
<p>The applicant is hereby notified that, at the time of establishment of this Notice, the time limit under Rule 46.1 for making amendments under Article 19 has not yet expired and the International Bureau had received neither such amendments nor a declaration that the applicant does not wish to make amendments.</p>	

## PATENT COOPERATION TREATY

-1. -11- 2000

PCT

From the INTERNATIONAL BUREAU

INFORMATION CONCERNING ELECTED  
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

To:

HÅMSØ, Eivind  
Håmsø Patentbyrå Ans  
Jostein Soppeland  
P.O. Box 171  
N-4302 Sandnes  
NORVÈGE

Date of mailing (day/month/year) 18 October 2000 (18.10.00)		
Applicant's or agent's file reference P 8333		IMPORTANT INFORMATION
International application No. PCT/NO00/00076	International filing date (day/month/year) 02 March 2000 (02.03.00)	Priority date (day/month/year) 15 March 1999 (15.03.99)
Applicant DIMENSION TECHNOLOGIES AS et al		

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

AP : GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW  
EP : AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE  
National : AU, BG, CA, CN, CZ, DE, IL, JP, KP, KR, MN, NO, NZ, PL, RO, RU, SE, SK, US

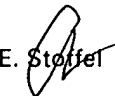
2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM  
OA : BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG  
National : AE, AL, AM, AT, AZ, BA, BB, BR, BY, CH, CR, CU, DK, DM, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MW, MX, PT, SD,  
SG, SI, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 39(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 36(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. (41-22) 740.14.35	Authorized officer:  R. E. Stoffel  Telephone No. (41-22) 338.83.38
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# PATENT COOPERATION TREATY

22. -3- 2001

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

HÅNSØ PATENTBYRÅ ANS  
Box 171  
N-4302 SANDNES  
NORWAY

## PCT

### WRITTEN OPINION

(PCT Rule 66)

Date of mailing  
(day/month/year)

**20-03-2001**

Applicant's or agent's file reference

P 8333

**REPLY DUE**

within 45 days  
from the above date of mailing

International application No.

PCT/NO00/00076

International filing date (day/month/year)

02.03.2000

Priority date (day/month/year)

15.03.1999

International Patent Classification (IPC) or both national classification and IPC7

G03B 35/16, H04N 13/04

Applicant

Dimension Technologies AS et al

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4.  
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis.  
For an informal communication with the examiner, see Rule 66.6.

**If no reply is filed**, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is:

15.07.2001

Name and mailing address of the IPEA/SE

Patent- och registreringsverket  
Box 5055  
S-102 42 STOCKHOLM

Telex  
17978  
PATOREG-S

Facsimile No. 08-667 72 88

Authorized officer

Björn Kallstenius/MP  
Telephone No. 08-782 25 00

## I. Basis of the opinion

## 1. With regard to the elements of the international application:\*

☒ the international application as originally filed☐ the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the claims:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, as amended (together with any statement) under article 19

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the drawings:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

☐ the sequence listing part of the description:

pages \_\_\_\_\_, as originally filed

pages \_\_\_\_\_, filed with the demand

pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is:☒ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).☐ the language of publication of the international application (under Rule 48.3(b)).☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

☐ contained in the international application in printed form.☐ filed together with the international application in computer readable form.☐ furnished subsequently to this Authority in written form.☐ furnished subsequently to this Authority in computer readable form.☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.4. ☐ The amendments have resulted in the cancellation of:☐ the description, pages \_\_\_\_\_☐ the claims, Nos. \_\_\_\_\_☐ the drawings, sheet/fig \_\_\_\_\_5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims	_____	YES
	Claims	<u>1-3</u>	NO
Inventive step (IS)	Claims	_____	YES
	Claims	<u>1-3</u>	NO
Industrial applicability (IA)	Claims	<u>1-3</u>	YES
	Claims	_____	NO

**2. Citations and explanations**

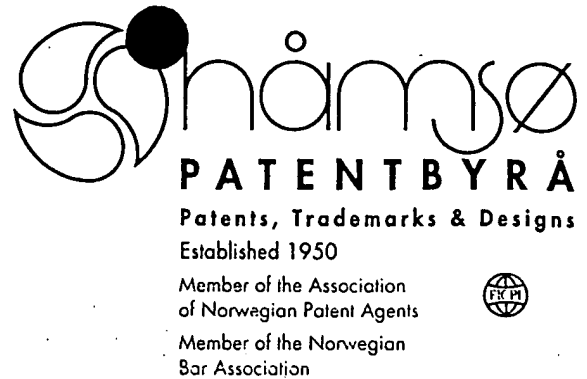
The invention relates to a method and a device for stereo projection of pictures represented by a picture signal alternating cyclically between a series of pictures intended for the right eye and a series of pictures intended for the left eye.

The aim of the invention is to provide good definition and absence of ghost images and good suitability to video and television.

In the invention odd numbered picture signals are sent to a first projector and even numbered picture signals are sent to a second projector. The odd numbered picture signals can be decoded and stored in a first picture storage, which is scanned periodically and projected by the first projector. In the same way the even numbered picture signals can be decoded and stored in a second picture storage, which is scanned periodically and projected by the second projector.

Such a method and device are however disclosed in all parts in the cited EP 0851691 A2. See e.g. columns 4-9. The subject matter of the claims thus involves no novelty and no inventive step.

PATENT OCH REGISTRERINGSVERKET  
Box 5055  
S-102 42 Stockholm  
SVERIGE



Your ref:

Our ref: P 8333n EH WA MW

Date: 1 June 2001

By telefax: 14 pages

Dear Sirs,

**RE: NORWEGIAN PATENT APPLICATION NO. PCT/NO00/00076 -  
Cyviz AS**

In reference of a PCT Written Opinion of March 20<sup>th</sup>, 2001, we respect fully submit as follows:

The priority-establishing Norwegian patent application 19991265 has matured into NO patent No. 308,925, issued on 13<sup>th</sup> November, 2000, on the basis of amended claims, where the entire content of claim 1 constituted preamble of the new main claim, in which the content of former claim 2 constituted characterising clause thereof. New claim 2 is based on former claim 3, but further features (from the specification) are added to amended claim 2. During the prosecution of the Norwegian application, i.a. WO 9632665 and EP 0851691 A2 were cited thereagainst.

The cited EP 0851691 A2 discloses a signal processing apparatus comprising first display means for displaying first converted video signals capable of being seen solely by an observer's right eye, and second display means for displaying second converted video signals capable of being seen solely by the observer's left eye. In the first place, said video signals are being outputted from a first signal source and a second signal source, respectively. A controller counts the horizontal scanning signals of each of the video signals entering into it from the signal sources.

Upon discriminating an odd-numbered line, the controller is adapted to connect a first selector to terminals so as to input the first video signal to a reversing unit; the second video signal being applied directly to a second selector. In the reversing unit, said first video signal's polarity is reversed. Then, it is outputted to said second selector which, thereupon is connected to terminals of second selector.

Finally, first video signal of reversed polarity and second video signal are applied to first and second display units, respectively. Upon discriminating an even-numbered line when the controller counts the horizontal scanning lines, the controller operates in an opposite mode, the

<b>Postal Address</b>	<b>Office Address</b>	<b>Telephone</b>	<b>Telefax</b>	<b>E-mail</b>	<b>Bank Account</b>	<b>Postal Giro</b>	<b>Enterprise No.</b>
Håmsø Patentbyrå ANS	Håmsø Patentbyrå ANS	Nat. 51 66 20 20	Nat. 51 66 18 96	patent@	9688.05.01205	0804 5654843	968502204
P.O. Box 171	Vågsgaten 43	Int. +47 51 66 20 20	Int. +47 51 66 18 96	hamso.no	Handelsbanken	Swift code	
N - 4302 Sandnes	N - 4306 Sandnes					PGINNOKK	
Norway	Norway						

first and second video signal finally being applied to the first and second display units, respectively.

This prior art image signal processing apparatus is primarily based on reversal of signal polarity, and the main object of the disclosure is to provide means for reducing the number of signal processing means as well as the number of adjustments of delay time between reversal and non-reversal of said signal polarity. However, the known method and apparatus seem to be rather complicated, comprising a plurality of parts and members which appear to be rather time-consuming in operation.

We recognise, however, the significance of this disclosure and the necessity of restricting and precisely defining Claim 1 of the present invention in respect of this cited publication. The object of this invention is, through the utilisation of simple and cheap means, to avoid deficiencies and disadvantages and, thus, provide a rational method and a simplified device adapted to provide stereo projection of pictures represented through an image signal alternating cyclically between picture for right eye and picture for left eye; enabling an especially suitable intermediate storage of the image signals as well as enabling stored image signals to be fetched rapidly and reliably upon need.

Please find enclosed a new set of claims in which both claims 1 and 2 have been restricted in view of the citations. We hope that these claims or correspondingly worded claims will receive a favourable consideration.

The amended description enclosed is conformed with new claims and completed with state of art, specified object, etc.

Yours faithfully,  
**HÅMSØ PATENTBYRÅ ANS**

A handwritten signature in dark ink, appearing to read 'Odd Skjæveland', with a stylized flourish at the end.

Odd Skjæveland

Encl.

## A m e n d e d   C l a i m s

1.    A method for stereo projection of pictures represented  
by a picture signal alternating cyclically between  
picture intended for right eye and picture intended for  
5    left eye, and wherein first and, thereupon, each odd  
number picture received, is transferred to a first  
projector (1), and second and, thereupon, each even  
number picture received, is transferred to second  
projector (2), c h a r a c t e r i z e d   i n   t h a t  
10    picture signals for odd number pictures are decoded and  
stored in a first picture storage (5) which is scanned  
periodically and projected by first projector (1), and  
that picture signals for even number pictures are  
decoded and stored in a second picture storage (6) which  
15    is scanned periodically and projected by said second  
projector (2).
  
2.    A device for stereo projection of pictures represented  
by a picture signal which alternates cyclically between  
picture intended for right eye and picture intended for  
20    left eye, c h a r a c t e r i z e d   i n   a   p a g e  
selector (17) adapted to transmit picture signals for  
first and, thereupon, each odd number picture to a first  
projector (1) and second and, thereupon, each even  
number picture to a second projector (2), and that said  
25    page selector (17) is assigned a control unit (19)  
adapted to sense the incoming picture signal and  
recognize signal values or signal codes indicating new  
picture and to transmit alternate to said page selector  
(17) for each picture.

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>P 8333</b>	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. <b>PCT/NO00/00076</b>	International filing date (day/month/year) <b>02.03.2000</b>	Priority date (day/month/year) <b>15.03.1999</b>
International Patent Classification (IPC) or national classification and IPC <b>G03B 35/16, H04N 13/04</b>		
Applicant <b>Dimension Technologies AS et al</b>		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	This REPORT consists of a total of <u>  3  </u> sheets, including this cover sheet.  <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  These annexes consist of a total of <u>  12  </u> sheets.
3.	This report contains indications relating to the following items:  <div style="margin-left: 20px;">           I <input checked="" type="checkbox"/> Basis of the report            II <input type="checkbox"/> Priority            III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability            IV <input type="checkbox"/> Lack of unity of invention            V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement            VI <input type="checkbox"/> Certain documents cited            VII <input type="checkbox"/> Certain defects in the international application            VIII <input type="checkbox"/> Certain observations on the international application         </div>

Date of submission of the demand  <b>13.09.2000</b>	Date of completion of this report  <b>02.07.2001</b>
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88 <div style="text-align: right; font-size: small;">Telex 17978 PATOREG-S</div>	Authorized officer  <b>Björn Kallstenius / MRo</b> Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed
- ☒ the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages 1-11, filed with the letter of 01.06.2001
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement) under article 19  
pages \_\_\_\_\_, filed with the demand  
pages 1, filed with the letter of 01.06.2001
- ☒ the drawings:  
pages 1-2, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.



**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	<u>1-2</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-2</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-2</u>	YES
	Claims		NO

**2. Citations and explanations (Rule 70.7)**

The invention relates to a method and a device for stereo projection of pictures represented by a picture signal alternating cyclically between a series of pictures intended for the right eye and a series of pictures intended for the left eye.

In the invention odd numbered picture signals are sent to a first projector and even numbered picture signals are sent to a second projector projector.

Such a method and device are disclosed in all parts in the cited EP 0851691 A2. See e.g. columns 4-9.

The aim of the invention is to provide good definition and absence of ghost images and good suitability to video and television.

This is achieved in the following manner: . The odd numbered picture signals are decoded and stored in a first picture storage, which is scanned periodically and projected by the first projector. In the same way the even numbered picture signals are decoded and stored in a second picture storage , which is scanned periodically and projected by the second projector. Thus a simpler and cheaper method and device is achieved.


This improved method and device is not disclosed in any of the cited references and cannot be considered obvious to a person skilled in the art.

The industrial applicability is obvious.

PCT

## REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only	
PCT/NO 000	00076
International Application No.	
International Filing Date	02 MARS 2000 (02.03.00)
 <b>PATENTSTYRET</b> Centre for industrial property	
Name of receiving Office: "Norwegian PCT International Application"	
Applicant's or agent's file reference (if desired) (12 characters maximum)	P 8333

<b>Box No. I TITLE OF INVENTION</b>	
A method and an apparatus for stereoprojection of pictures	
<b>Box No. II APPLICANT</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)  Dimension Technologies AS Vassbotnen 15 N-4313 SANDNES	
<input type="checkbox"/> This person is also inventor.	
Telephone No.	
Facsimile No.	
Teleprinter No.	
State (that is, country) of nationality: NORWAY	State (that is, country) of residence: NORWAY
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input checked="" type="checkbox"/> all designated States except the United States of America <input type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<b>Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)</b>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)  VAAGE, Joar Karlsminnegt. 24 N-4014 STAVANGER	
This person is: <input type="checkbox"/> applicant only <input checked="" type="checkbox"/> applicant and inventor <input type="checkbox"/> inventor only (If this check-box is marked, do not fill in below.)	
State (that is, country) of nationality: NORWAY	State (that is, country) of residence: NORWAY
This person is applicant for the purposes of: <input type="checkbox"/> all designated States <input type="checkbox"/> all designated States except the United States of America <input checked="" type="checkbox"/> the United States of America only <input type="checkbox"/> the States indicated in the Supplemental Box	
<input type="checkbox"/> Further applicants and/or (further) inventors are indicated on a continuation sheet.	
<b>Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE</b>	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: <input checked="" type="checkbox"/> agent <input type="checkbox"/> common representative	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)  HÅMSØ PATENTBYRÅ ANS Eivind Håmsø, Odd Skjæveland, Gunnar Håmsø, Arnold Østvold, Borge Håmsø, Jostein Soppeland Box 171 N-4302 SANDNES NORWAY	
Telephone No. + 47 51 66 20 20	
Facsimile No. + 47 51 66 18 96	
Teleprinter No.	
<input type="checkbox"/> Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

CONFIRMATION COPY

## Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

## Regional Patent

- ☒ AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT
- ☒ EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, CY Cyprus, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> AE United Arab Emirates                  | <input checked="" type="checkbox"/> LR Liberia   |
| <input checked="" type="checkbox"/> AL Albania                               | <input checked="" type="checkbox"/> LS Lesotho   |
| <input checked="" type="checkbox"/> AM Armenia                               | <input checked="" type="checkbox"/> LT Lithuania   |
| <input checked="" type="checkbox"/> AT Austria ..... and Utility Model       | <input checked="" type="checkbox"/> LU Luxembourg  |
| <input checked="" type="checkbox"/> AU Australia                             | <input checked="" type="checkbox"/> LV Latvia  |
| <input checked="" type="checkbox"/> AZ Azerbaijan                            | <input checked="" type="checkbox"/> MA Morocco   |
| <input checked="" type="checkbox"/> BA Bosnia and Herzegovina                | <input checked="" type="checkbox"/> MD Republic of Moldova   |
| <input checked="" type="checkbox"/> BB Barbados                              | <input checked="" type="checkbox"/> MG Madagascar  |
| <input checked="" type="checkbox"/> BG Bulgaria                              | <input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia                             |
| <input checked="" type="checkbox"/> BR Brazil                                |  |
| <input checked="" type="checkbox"/> BY Belarus                               | <input checked="" type="checkbox"/> MN Mongolia  |
| <input checked="" type="checkbox"/> CA Canada                                | <input checked="" type="checkbox"/> MW Malawi  |
| <input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein  | <input checked="" type="checkbox"/> MX Mexico  |
| <input checked="" type="checkbox"/> CN China                                 | <input checked="" type="checkbox"/> NO Norway  |
| <input checked="" type="checkbox"/> CR Costa Rica                            | <input checked="" type="checkbox"/> NZ New Zealand   |
| <input checked="" type="checkbox"/> CU Cuba                                  | <input checked="" type="checkbox"/> PL Poland  |
| <input checked="" type="checkbox"/> CZ Czech Republic and Utility Model      | <input checked="" type="checkbox"/> PT Portugal  |
| <input checked="" type="checkbox"/> DE Germany ..... and Utility Model       | <input checked="" type="checkbox"/> RO Romania   |
| <input checked="" type="checkbox"/> DK Denmark ..... and Utility Model       | <input checked="" type="checkbox"/> RU Russian Federation  |
| <input checked="" type="checkbox"/> DM Dominica                              | <input checked="" type="checkbox"/> SD Sudan   |
| <input checked="" type="checkbox"/> EE Estonia ..... and Utility Model       | <input checked="" type="checkbox"/> SE Sweden  |
| <input checked="" type="checkbox"/> ES Spain                                 | <input checked="" type="checkbox"/> SG Singapore   |
| <input checked="" type="checkbox"/> FI Finland ..... and Utility Model       | <input checked="" type="checkbox"/> SI Slovenia  |
| <input checked="" type="checkbox"/> GB United Kingdom                        | <input checked="" type="checkbox"/> SK Slovakia ..... and Utility Model                                      |
| <input checked="" type="checkbox"/> GD Grenada                               | <input checked="" type="checkbox"/> SL Sierra Leone  |
| <input checked="" type="checkbox"/> GE Georgia                               | <input checked="" type="checkbox"/> TJ Tajikistan  |
| <input checked="" type="checkbox"/> GH Ghana                                 | <input checked="" type="checkbox"/> TM Turkmenistan  |
| <input checked="" type="checkbox"/> GM Gambia                                | <input checked="" type="checkbox"/> TR Turkey  |
| <input checked="" type="checkbox"/> HR Croatia                               | <input checked="" type="checkbox"/> TT Trinidad and Tobago   |
| <input checked="" type="checkbox"/> HU Hungary                               | <input checked="" type="checkbox"/> TZ United Republic of Tanzania   |
| <input checked="" type="checkbox"/> ID Indonesia                             | <input checked="" type="checkbox"/> UA Ukraine   |
| <input checked="" type="checkbox"/> IL Israel                                | <input checked="" type="checkbox"/> UG Uganda  |
| <input checked="" type="checkbox"/> IN India                                 | <input checked="" type="checkbox"/> US United States of America  |
| <input checked="" type="checkbox"/> IS Iceland                               |  |
| <input checked="" type="checkbox"/> JP Japan                                 | <input checked="" type="checkbox"/> UZ Uzbekistan  |
| <input checked="" type="checkbox"/> KE Kenya                                 | <input checked="" type="checkbox"/> VN Viet Nam  |
| <input checked="" type="checkbox"/> KG Kyrgyzstan                            | <input checked="" type="checkbox"/> YU Yugoslavia  |
| <input checked="" type="checkbox"/> KP Democratic People's Republic of Korea | <input checked="" type="checkbox"/> ZA South Africa  |
|  | <input checked="" type="checkbox"/> ZW Zimbabwe  |
| <input checked="" type="checkbox"/> KR Republic of Korea                     | Check-boxes reserved for designating States which have become party to the PCT after issuance of this sheet: |
| <input checked="" type="checkbox"/> KZ Kazakhstan                            | <input type="checkbox"/> .....   |
| <input checked="" type="checkbox"/> LC Saint Lucia                           | <input type="checkbox"/> .....   |
| <input checked="" type="checkbox"/> LK Sri Lanka                             |  |

**Precautionary Designation Statement:** In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

<b>Box No. VI PRIORITY CLAIM</b>		<input type="checkbox"/> Further priority claims are indicated in the Supplemental Box.		
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country	regional application: regional Office	international application: receiving Office
item (1) (15.03.99) 15 March 1999	19991265	Norway		
item (2)				
item (3)				

☒ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office) identified above as item(s): (1)

\* Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earlier application was filed (Rule 4.10(b)(ii)). See Supplemental Box.

### Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):	Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):
ISA/SE	Date (day/month/year) Number Country (or regional Office)

### Box No. VIII CHECK LIST; LANGUAGE OF FILING

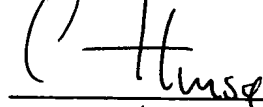
This international application contains the following number of sheets: request : 3 description (excluding sequence listing part) : 10 claims : 1 abstract : 1 drawings : 2 sequence listing part of description : Total number of sheets : 17	This international application is accompanied by the item(s) marked below: 1. <input checked="" type="checkbox"/> fee calculation sheet 2. <input checked="" type="checkbox"/> separate signed power of attorney 3. <input type="checkbox"/> copy of general power of attorney; reference number, if any: 4. <input type="checkbox"/> statement explaining lack of signature 5. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s): 6. <input type="checkbox"/> translation of international application into (language): 7. <input type="checkbox"/> separate indications concerning deposited microorganism or other biological material 8. <input type="checkbox"/> nucleotide and/or amino acid sequence listing in computer readable form 9. <input checked="" type="checkbox"/> other (specify): Off. Action of 8 June 1999
---	---

Figure of the drawings which should accompany the abstract: 1	Language of filing of the international application: Norwegian
---	--

### Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

HÅMSØ PATENTBYRÅ ANS



Gunnar Håmsø

For receiving Office use only		2. Drawings: <input checked="" type="checkbox"/> received: <input type="checkbox"/> not received:
1. Date of actual receipt of the purported international application:	02 MARS 2000 (02.03.00)	
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:		
4. Date of timely receipt of the required corrections under PCT Article 11(2):		
5. International Searching Authority (if two or more are competent): ISA/SE	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid.	

For International Bureau use only	
Date of receipt of the record copy by the International Bureau:	10 APRIL 2000 (10.04.00)

1/2

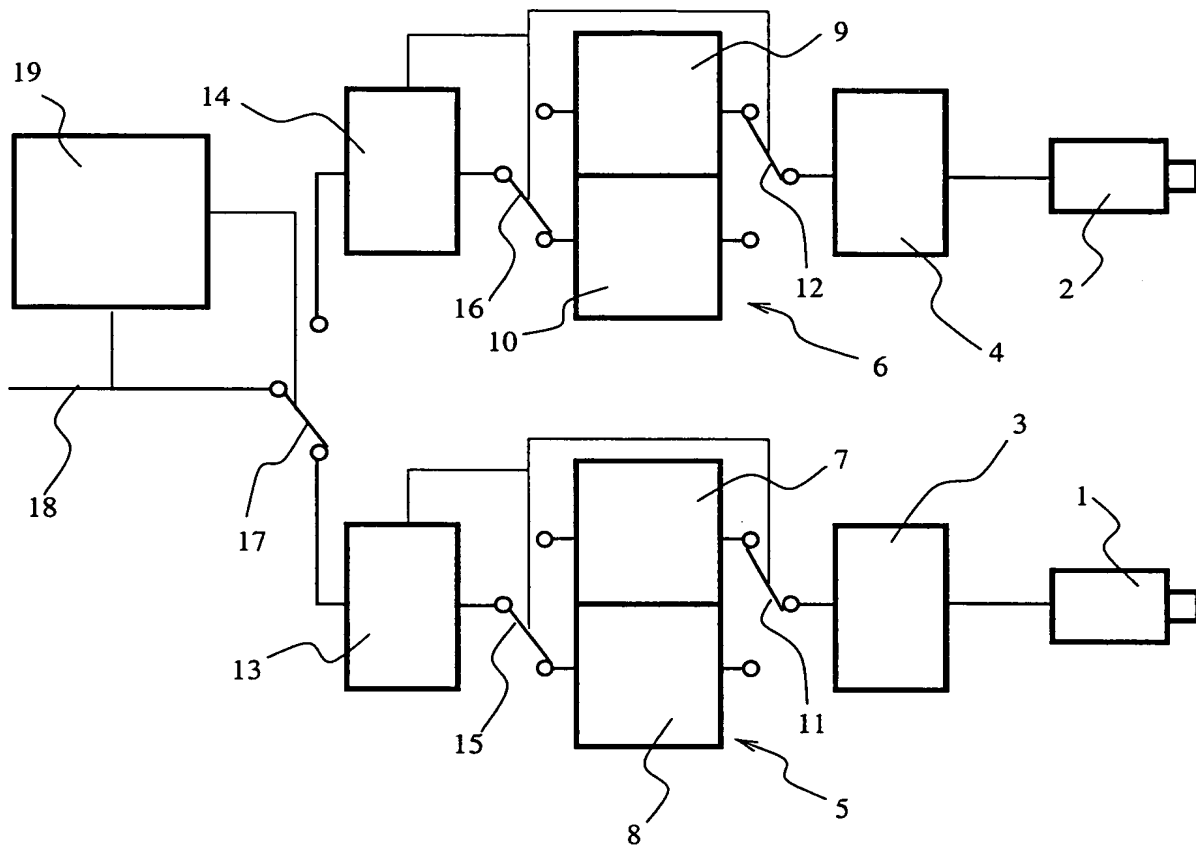


Fig. 1

2/2

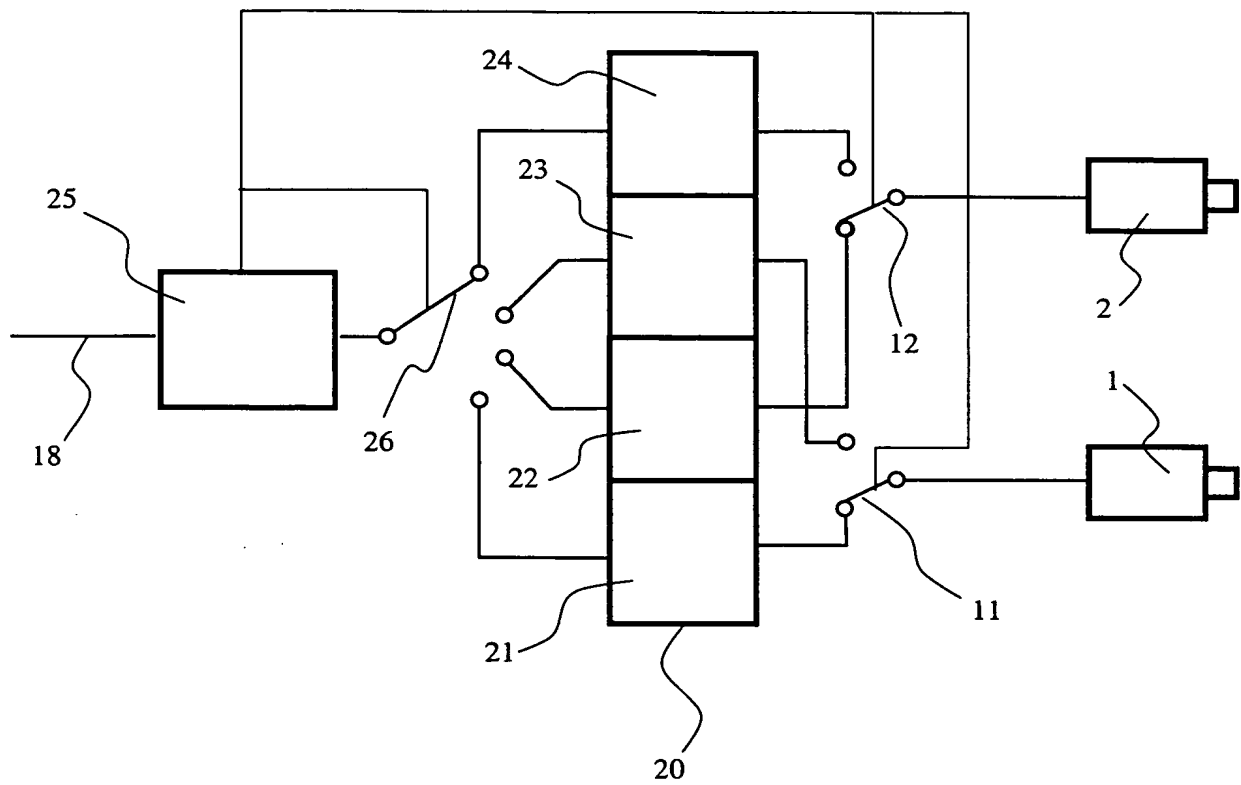


Fig. 2

## FREMGANGSMÅTE OG APPARAT FOR STEREOPROJEKSJON AV BILDER

Oppfinnelsen angår fremgangsmåte og anordning for stereoprojeksjon av bilder.

Vårt dybdesyn henger sammen med at høyre og venstre øye ser  
5 omgivelsene fra forskjellig sted og i litt forskjellig vinkel. Det ene øye ser et bilde som avviker fra bildet det andre øyet ser, og hjernen samordner de to slik at vi opplever tre dimensjoner.

Det er kjent å skape bilder med tredimensjonal virkning ved å  
10 la høyre og venstre øye se hvert sitt bilde, for eksempel to fotografier tatt fra to punkt med innbyrdes avstand tilsvarende normal innbyrdes avstand mellom et menneskes øyne. Det finnes spesielle kamera for slike formål, såkalte stereokamera, med to objektiver.

15 I de senere år er teknikker som har vært brukt for å oppnå tredimensjonal virkning ved fotografier utviklet til å omfatte bilder som kan overføres elektronisk, så som videobilder og digitaliserte bilder, og det er utviklet teknikk som gjør

det mulig å vise både stillbilder og levende bilder på lerret.

For at en betrakter skal oppleve tredimensjonal virkning, må bildet som er fotografert eller på annen måte laget for høyre øye vises for høyre øye, og bildet som er fotografert eller på annen måte laget for venstre øye, må vises for venstre øye. Viser begge bilder for begge øyne, oppleves et uskarpt bilde og den tredimensjonale virkning uteblir.

For å unngå at høyre øye ser bildet som hører til venstre øye og motsatt, kan bildene betraktes gjennom et okular for hvert øye, i et såkalt stereoskop. Dette gir god tredimensjonal virkning, men det er lite egnet for bilder som skal betraktes av flere personer samtidig, for eksempel i en kinosal.

Det er kjent å dele høyre og venstre bilde i smale striper som settes sammen vekselvis til ett bilde. Ved å betrakte bildestripene gjennom glass eller plast, hvor det er formet prizmer parallelt med bildestripene, oppnås at høyre øye ser bildestriper som hører til høyre bilde og venstre øye ser bildestriper som hører til venstre bilde.

Det er videre kjent å trykke to bilder, ett for høyre øye og ett for venstre øye i register på papir. Slike bilder betraktes gjennom spesielle briller som skiller bildene fra hverandre, slik at høyre øye ser det ene bildet og venstre øye ser det andre bildet.

Ved én type briller nyttes brilleglass med forskjellig farge for hvert øye, eksempelvis et rødt og et blågrønt brilleglass. Hvert bilde fargefiltreres før trykking. Høyre bilde trykkes i komplementær farge til venstre bilde og venstre



brilleglass og motsatt. Hvert øye ser da forskjellig bilde. Teknikken anvendes også ved projisering av to bilder i register på et lerret, og det er mulig å vise levende bilder, film og animasjoner, på denne måten.

5 Teknikken, som kan også anvendes for fjernsyn, har flere ulemper. Filtreringen og brilleglassene påvirker fargebalansen, og det oppnås ikke fullgod separering av bildene for høyre og venstre øye. Hvert øye oppfatter en del av bildet som er ment for motsatt øye, og bildet oppleves derfor som  
10 uskarpt.

En annen kjent måte å separere bilder for høyre og venstre øye består i at bilde for hvert øye projiseres i register på et lerret ved hjelp av polarisert lys. Polariseringen for det ene bilde er vinkelrett på polariseringen for det andre, og  
15 betrakteren bruker briller med glass som hvert tilsvarende er polarisert for å slippe gjennom lys for kun ett av bildene. Ved dette oppnås mindre fargefeil enn ved bruk av fargefilter, og det oppnås bedre bildeseparering.

Ved overføring av elektroniske bilder, slik som videobilder  
20 har det vist seg vanskelig å synkronisere to parallelle bildesignal på en flimmerfri måte. I forbindelse med projisering av videobilder eller bilder fra datamaskiner, har det vist seg fordelaktig å overføre bilde for vekselvis høyre og venstre øye i en felles kanal i stedet for i to parallelle kanaler. Det vil si at hvert annet bilde som overføres, hører til  
25 høyre øye mens resten hører til venstre øye. Bildene projiseres på et lerret og betraktes gjennom briller med glass som kan blende og åpne for lys i takt med et elektrisk signal som veksler synkront med bildene. Slike brilleglass benytter flytende krystaller. Venstre brilleglass blendes mens høyre bil-  
30

de projiseres, og høyre brilleglass blendes mens venstre bilde projiseres.

Denne kjente teknikk gir god virkning, men den har flere ulemper. Brillene er kostbare, og de må forsynes med et elektrisk signal for synkronisering med bildestrømmen, noe som kan være komplisert i en kinosal. Teknikken er i praksis kun anvendbar for stasjonære anlegg. Det stilles også store krav til projektoren som må arbeide med dobbel bildefrekvens. Den høye bilderaten medfører at rimelige projektorer hvor bildet dannes ved hjelp flytende krystaller, ikke kan benyttes.

Formålet med oppfinnelsen er å fremskaffe en fremgangsmåte og en forenklet anordning for å oppnå stereoprojeksjon av bilder representert ved et bildesignal som syklisk veksler mellom bilde for høyre og venstre øye.

Formålet oppnås ved trekk som angitt i følgende beskrivelse og etterfølgende patentkrav.

Ifølge oppfinnelsen mottas et bildesignal som på kjent måte veksler mellom bilde for høyre og venstre øye.

Første bilde som mottas i innkommende bildesignal, dekodes og eventuelt digitaliseres til et første digitalt bilde som lagres i et første digitalt lager, typisk et hurtiglager i en datamaskin. Første digitale lager avses på kjent måte og fra innholdet dannes et utgående første bildesignal. Andre bilde som mottas i innkommende bildesignal, dekodes og digitaliseres tilsvarende som for første bilde og lagres i et andre digitalt lager. Andre digitale lager avses og fra innholdet dannes et andre utgående bildesignal. Etterfølgende

bilder som mottas i innkommende bildesignal, lagres deretter vekselvis i første og andre digitale lager.

Første utgående bildesignal ledes til en første projektor, og andre utgående bildesignal ledes til en andre projektor. Selv  
5 om innkommende bildesignal har dobbel bilderate, arbeider hver projektor med normal bilderate, slik at det kan anvendes ordinære projektorer.

Hvert av første og andre digitale lager kan med fordel være delt i to eller flere områder som nyttes syklisk. Derved kan  
10 tredje bilde mottas, dekodes, digitaliseres og lagres adskilt fra første bilde og uten å overskrive dette. Femte bilde kan lagres på samme sted som første bilde og overskrive det mens tredje bilde ligger intakt og kan projiseres mens femte bilde mottas og lagres.

15 Tilsvarende kan fjerde bilde mottas, dekodes, digitaliseres og lagres adskilt fra andre bilde og uten å overskrive dette. Sjette bilde kan lagres på samme sted som andre bilde og overskrive det mens fjerde bilde projiseres.

Ved slik oppdeling og syklisk bruk av første og andre digitale  
20 le lager, oppnås stor toleranse med hensyn til bilderaten i innkommende bildesignal. Dette er en stor fordel når bildesignal overføres via datanett hvor overføringshastigheten kan variere mye, og hvor bildedata kan gå tapt.

Bildet fra den ene projektoren projiseres slik at det kan be-  
25 traktes av det ene øye, og bilde fra den andre projektoren projiseres slik at det kan betraktes av det andre øye. I en foretrukket oppstilling projiseres bilde fra første og andre projektor i register på et lerret ved hjelp av polarisert

lys, og bildene betraktes gjennom briller med polariserte glass slik som forklart.

Ved oppfinnelsen oppnås at hvert projisert bilde kan fornyes i en takt som kun avhenger av frekvensen de digitale lager  
5 avses med. Selv om dette kan innebære at samme bilde vises flere ganger om innkommende bilderate synker, oppnås en vesentlig reduksjon av flimmer sammenliknet med kjent teknikk hvor bildeprojeksjon følger innkommende bilderate.

En anordning for å utøve den beskrevne fremgangsmåte beskrives i det følgende ved hjelp av to utførelsesseksempel, og det  
10 vises til vedføyde tegninger, hvor:

Fig. 1 viser et forenklet blokksjema for en første utførelse av oppfinnelsen;

15 Fig. 2 viser et forenklet blokkskjema for en andre utførelse av oppfinnelsen.

I fig. 1 angir henvisningstallet 1 en høyre projektor som er innrettet til å projisere et bilde som skal sees av høyre øye, i register med et projisert bilde fra en tilsvarende  
20 venstre projektor 2 som projiserer et bilde som skal sees av venstre øye.

Høyre projektor 1 er koplet til og får sitt bildesignal fra en høyre bildegenerator 3. Venstre prosjektor 2 er tilsvarende koplet til en venstre bildegenerator 4. Hver bildegenerator  
25 3, 4 er innrettet til å avseke et bildelager og generere et bildesignal som får den tilhørende projektor 1, 2 til å projisere et tilhørende synlig bilde på et lerret.

Høyre bildegenerator 3 er innrettet til periodisk å avsøke et område i et høyre bildelager 5 og venstre bildegenerator 3 er tilsvarende innrettet til periodisk å avsøke et område i et venstre bildelager 6. Høyre bildelager 5 er delt i et første høyre bildeområde 7 og et andre høyre bildeområde 8. Venstre bildelager 6 er tilsvarende delt i et første venstre bildeområde 9 og et andre venstre bildeområde 10.

En høyre bildevelger 11 er innrettet til å reagere på et styresignal og vekselvis kople høyre bildegenerator 3 til første eller andre bildeområde 7, 8 i høyre bildelager 5, og dermed bestemme om høyre projektor 1 projiserer et bilde basert på første eller andre bildeområde 7, 8. En venstre bildevelger 12 er tilsvarende innrettet til å reagere på et styresignal og vekselvis kople venstre bildegenerator 4 til første eller andre bildeområde 9, 10 i venstre bildelager 6, og dermed bestemme om venstre projektor 2 projiserer et bilde basert på første eller andre bildeområde 9, 10.

En høyre dekode 13 er innrettet til å motta et bildesignal og lagre verdier som representerer bildesignalet, i høyre bildelager 5 på et format som høyre bildegenerator 3 er innrettet til å kunne omforme til bildesignal for høyre projektor 1. En venstre dekode 14 er tilsvarende innrettet til å motta et bildesignal og lagre verdier som representerer bildesignalet, i venstre bildelager 6 på et format som venstre bildegenerator 4 er innrettet til å kunne omforme til bildesignal for venstre projektor 2.

Mellom høyre dekode 13 og høyre bildelager 5 er det anordnet en høyre områdevelger 15 som er innrettet til å reagere på et styresignal og vekselvis kople dekode 13 til første eller første bildeområde 8, 7 i høyre bildelager 5, og dermed be-

stemme om dekoderen 13 lagrer verdier i andre eller første bildeområde 8, 7. Høyre bildevelger 11 og høyre områdevelger 15 veksler slik at høyre bildegenerator 3 og høyre dekode-  
13 er koplet til motsatt bildeområde 7, 8 i høyre bildelager 5.  
5 Mellom venstre dekode-14 og venstre bildelager 6 er det tilsvarende anordnet en venstre områdevelger 16 som er innrettet til å reagere på et styresignal og vekselvis kople dekoderen 14 til andre eller første bildeområde 10, 9 i venstre bildelager 6, og dermed bestemme om dekoderen 14 lagrer verdier i  
10 andre eller første bildeområde 10, 9. Venstre bildevelger 12 og venstre områdevelger 16 veksler slik at venstre bildegene-  
rator 4 og venstre dekode-14 er koplet til motsatt bildeområde 9, 10 i venstre bildelager 6.

En sidevelger 17 er innrettet til å reagere på styresignal og  
15 vekselvis kople en leder 18 for et innkommende bildesignal til høyre dekode-13 eller venstre dekode-14.

En styreenhet 19 er innrettet til å føle det innkommende bildesignal og gjenkjenne signalverdier eller signalkoder som angir nytt bilde og gi vekslesignal til sidevelgeren 17 for  
20 hvert bilde. Høyre dekode-13 er innrettet til å gi vekslesignal til høyre områdevelger 15 og høyre bildevelger 11 hver gang dekoderen har lagret et nytt bilde i høyre bildelager 5. Venstre dekode-14 er innrettet til å gi vekslesignal til  
venstre områdevelger 16 og venstre bildevelger 12 hver gang  
25 dekoderen har lagret et nytt bilde i høyre bildelager 6.

Hver bildegenerator 3, 4 mater nytt bilde til høyre henholdsvis venstre projektor 1, 2 med en fast bilderate, for eksempel seksti ganger pr sekund, selv om innkommende bilderate varierer. I mangel av ny bildeinformasjon, vil bildegenerator-  
30 rene 3, 4 gjenta siste bilde.

Høyre bildevelger 11 kan komme til å veksle mens høyre bildegenerator 3 er i ferd med å overføre bildesignal til projektoren 1. Bildegeneratoren 3 kan med fordel utføres med internt ikke vist lager med kapasitet for ett bilde, og bare  
5 avkjenne høyre bildelager 5 hver gang den er ferdig med å overføre et bilde til høyre projektor 1. Derved unngås at et projisert bilde består av deler fra to bilder. Venstre bildevelger 12 kan tilsvarende komme til å veksle mens venstre bildegenerator 4 er i ferd med å overføre bildesignal til  
10 projektoren 2. Bildegeneratoren 4 kan også med fordel utføres med internt ikke vist lager med kapasitet for ett bilde, og bare avkjenne venstre bildelager 6 hver gang den er ferdig med å overføre et bilde til venstre projektor 2. Derved unngås at et projisert bilde består av deler fra to bilder.

15 En andre og foretrukket utførelse av oppfinnelsen er vist i fig. 2, hvor projektorene 1, 2 er koplet til et felles bildelager 20 via hver sin bildevelger 11 henholdsvis 12. Eventuell bildegenerator for hver av projektorene 1, 2 er ikke vist, men kan arrangeres tilsvarende som beskrevet. Bildelageret 20 er delt i fire bildeområder 21, 22, 23, 24. En styreenhet 25 er innrettet til å lese og lagre bildesignal i lederen 18 i bildelageret 20 ett av bildeområdene 21, 22, 23, 24 via en områdevelger 26. Bilder lagres i fortløpende rekkefølge slik at første bilde lagres i bildeområde 21, det neste  
20 i 22 og så videre inntil alle bildeområdene er brukt. Neste  
25 bilde lagres i 21 og prosessen gjentas, idet bildelageret 20 er organisert som et ringbuffer.

Projektor 1 leser via sin bildevelger 11 et bilde som er lagret i bildeområde 21 eller 23. Projektor 2 leser via sin bildevelger 12 et bilde som er lagret i bildeområde 22 eller 24.  
30

Hver projektor 1, 2 leser altså hvert annet bilde fra bilde-lageret 20.

Veksletakten for bildevelgerne 11 og 12 justeres slik at det samlede projiserte bilde blir mest mulig flimmerfritt. Bilde-  
 5 takten på hver projektor 1, 2 kan eksempelvis være lik halvparten av takten på innkommende bilder når den er lavere enn en på forhånd bestemt verdi, og deretter begrenses til en øvre bildetakt om innkommende bildetakt øker ut over den. Typisk bør innkommende bildetakt lavere enn 85 bilder per se-  
 10 kund medføre en tilsvarende utgående bildetakt. Over denne grense kan for eksempel utgående bildetakt halveres.

Likeledes kan bildetakten til hver projektor 1, 2 begrenses til en minste verdi, slik at et stabilt bilde opprettholdes ved innkommende bildesignal som har særdeles lav takt.



## P a t e n t k r a v

1. Fremgangsmåte for stereoprojeksjon av bilder representert ved et bildesignal som syklisk veksler mellom bilde beregnet for høyre øye og bilde beregnet for venstre øye k a r a k -  
5 t e r i s e r t v e d at første og deretter hvert oddetalls bilde som mottas, overføres til en første projektor (1) og andre og deretter hvert partalls bilde som mottas, overføres til en annen projektor (2).
2. Fremgangsmåte ifølge krav 1, k a r a k t e r i s e r t  
10 v e d at bildesignal for oddetalls bilder dekodes og lagres i et første bildelager (5) som avses periodisk og projiseres av den ene projektor (1), og at bildesignal for partalls bilder dekodes og lagres i et andre bildelager (6) som avses periodisk og projiseres av den andre projektor (2).
- 15 3. Anordning for stereoprojeksjon av bilder representert ved et bildesignal som syklisk veksler mellom bilde beregnet for høyre øye og bilde beregnet for venstre øye, k a r a k t e -  
r i s e r t v e d en sidevelger (17) som er innrettet til å  
-- sende bildesignal for første og deretter hvert oddetalls bil-  
20 de til én projektor (1) og andre og deretter hvert partalls bilde til en annen projektor (2).

# S a m m e n d r a g

Anordning for stereoprojeksjon av bilder representert ved et bilde signal som syklisk veksler mellom bilde beregnet for høyre øye og bilde beregnet for venstre øye. En sidevelger  
 5 (17) er som innrettet til å sende bilde signal for første og deretter hvert oddetalls bilde til én projektor (1) og andre og deretter hvert partalls bilde til en annen projektor (2).

(Fig. 1)

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference P 8333	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/NO00/00076	International filing date (day/month/year) 02.03.2000	Priority date (day/month/year) 15.03.1999
International Patent Classification (IPC) or national classification and IPC <sub>7</sub> G03B 35/16, H04N 13/04		
Applicant Dimension Technologies AS et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 12 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

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Date of submission of the demand 13.09.2000	Date of completion of this report 02.07.2001
Name and mailing address of the IPEA/SE Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-667 72 88	Authorized officer Björn Kallstenius / MRo Telephone No. 08-782 25 00

Form PCT/IPEA/409 (cover sheet) (January 1998)

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/NO00/00076

## I. Basis of the report

### 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages 1-11, filed with the letter of 01.06.2001
- ☒ the claims:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, as amended (together with any statement) under article 19  
 pages \_\_\_\_\_, filed with the demand  
 pages 1, filed with the letter of 01.06.2001
- ☒ the drawings:  
 pages 1-2, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
 pages \_\_\_\_\_, as originally filed  
 pages \_\_\_\_\_, filed with the demand  
 pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

### 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

### 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

### 4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheet/fig \_\_\_\_\_

### 5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2 (c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item I and annexed to this report.

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/NO00/00076

## V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	<u>1-2</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-2</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-2</u>	YES
	Claims		NO

### 2. Citations and explanations (Rule 70.7)

The invention relates to a method and a device for stereo projection of pictures represented by a picture signal alternating cyclically between a series of pictures intended for the right eye and a series of pictures intended for the left eye.

In the invention odd numbered picture signals are sent to a first projector and even numbered picture signals are sent to a second projector projector.

Such a method and device are disclosed in all parts in the cited EP 0851691 A2. See e.g. columns 4-9.

The aim of the invention is to provide good definition and absence of ghost images and good suitability to video and television.

This is achieved in the following manner: . The odd numbered picture signals are decoded and stored in a first picture storage, which is scanned periodically and projected by the first projector. In the same way the even numbered picture signals are decoded and stored in a second picture storage , which is scanned periodically and projected by the second projector. Thus a simpler and cheaper method and device is achieved.

This improved method and device is not disclosed in any of the cited references and cannot be considered obvious to a person skilled in the art.

The industrial applicability is obvious.

# A METHOD AND AN APPARATUS FOR STEREOPROJECTION OF PICTURES

The invention relates to a method and a device for stereoprojection of pictures.

Our depth sight is connected with the fact that right and  
5 left eye sees the surroundings from a different place and under a somewhat different angle. One eye sees a picture differing from the picture that the other eye sees, and the brain co-ordinates the two such that we experience three dimensions.

10 It is known to create pictures with a three-dimensional effect by letting right and left eye see a picture of its own, e.g. two photos taken from two points spaced correspondingly to a normal mutual distance between the eyes of a human being. There exist special cameras for such  
15 purposes, so-called stereo cameras, having two objectives.

In recent years, techniques used in order to achieve three-dimensional effect in photos, developed to comprise pictures that can be transferred electronically, such as video and

digitized images, and it has been developed technique that makes it possible to show both still pictures and moving pictures on screen.

To let a viewer experience three-dimensional effect, the  
5 picture photographed or made in some other way for the right eye must be shown for the right eye, and the picture photographed or made in some other way for the left eye, must be shown for the left eye. If both pictures are shown for both eyes, a blurred (unsharp) picture is experienced, and  
10 the three-dimensional effect fails.

In order to avoid that right eye sees the picture belonging to left eye, and vice versa, the pictures may be viewed through an ocular for each eye, in a so-called stereoscope. This gives a good three-dimensional effect, but it is not  
15 very suited for pictures to be viewed by several persons simultaneously, e.g. in a cinema hall.

It is known to divide right and left picture in narrow stripes which are assembled alternately to form one picture. When viewing the picture stripes through glass or  
20 plastic, where prisms are formed parallel to the pictures stripes, it is achieved that right eye sees picture stripes belonging to right picture, and that left eye sees picture stripes belonging to left picture.

Further, it is known to print two pictures, one for right eye  
25 and one for left eye in registry on paper. Such pictures are viewed through special spectacles separating the pictures from each other, so that right eye sees one picture and left eye sees the other picture.

In one type of spectacles, spectacle glasses having different colour for each eye is used, as an example a red and a bluish green. Each picture is prefiltered before printing. Right picture is printed in complementary colour to left picture and left spectacle glass, and vice versa. Then, each eye sees a different picture. The technique is also used when projecting two pictures in registry on a screen (canvas), and it is possible to show moving pictures, film and animations in this way.

10 The technique which also may be used for television, has several disadvantages. The filtration and the spectacle glasses influence the colour balance, and it is not achieved an adequate separation of the pictures for right and left eye. Each eye experiences a portion of the picture meant for the opposite eye and the picture is, thus, experienced as unsharp.

Another known way of separating pictures for right and left eye consists in that a picture for each eye is projected in registry on a screen by means of polarized light. The polarization for the one picture is at right angles on the polarization for the other, and the viewer uses spectacles having glasses each correspondingly being polarized for letting through light for one of the pictures only. By means of this, less colour error is achieved than by using colour filter, and a better picture separation is obtained.

Upon transfer of electronic pictures, such as video pictures, it has been found to be difficult to synchronize two parallel picture signals in a flickerfree way. In connection with projecting video pictures or pictures from computers, it has proved advantageous to transfer picture for alternate right



and left eye in a common channel in lieu of in two parallel channels. This means that every second picture transferred, belongs to right eye, while the rest belongs to left eye. The pictures are projected on a screen and are viewed through  
5 spectacles having glasses which can shut and open in step with an electric signal alternating synchronously with the pictures. Such spectacle glasses utilize liquid crystals. Left spectacle glass is shut while right picture is projected, and right spectacle glass is shut while left  
10 picture is projected.

This known technique gives a good effect, but it has several disadvantages. The spectacles are expensive, and they have to be provided with an electric signal for synchronization with the stream of pictures, which can be difficult in a cinema  
15 hall. In practice, the technique is usable only for stationary plants. Also, great demands are made upon the projector which has to operate with double picture frequency. The high picture rate involves that reasonable projectors in which the picture is formed by means of liquid crystals, can  
20 not be used.

The object of the invention is to provide a method and a simplified device in order to achieve stereo projection of pictures represented by a picture signal which cyclically alternates between picture for right and left eye.

25 The object is obtained by means of features as defined in the following description and the following claims.

According to the invention, a picture signal is received which in known manner alternate between picture for right and left eye.

First picture received in incoming picture signal, is decoded and, possibly, digitized into a first digital picture which is stored in a first digital storage device, typically a cache memory in a computer. First digital storage device is  
5 searched as known, and from the content is formed an outgoing first picture signal. Second picture received in incoming picture signal, is decoded and digitized correspondingly to first picture, and is stored in a second digital storage device. Second digital storage device is searched, and from  
10 the content is formed a second outgoing picture signal. Following pictures received in incoming picture signal are, thereupon, stored alternately in first and second digital storage device.

First outgoing picture signal is passed to a first  
15 projector, and second outgoing picture signal is passed to a second projector. Even if incoming picture signal has double picture rate, each projector operates with normal picture rate, so that ordinary projectors can be used.

Each of said first and second digital storage device may  
20 advantageously be divided into two or more areas used cyclically. Thus, third picture can be received, decoded, digitized and stored separately from first picture and without overwriting the same. Fifth picture may be stored at the same place as first picture and overwrite the same, while  
25 third picture is intact and may be projected during receipt and storing of fifth picture.

Correspondingly, fourth picture can be received, decoded, digitized and stored separately from second picture, without overwriting the same. Sixth picture can be stored at the

same place as second picture and overwrite the same while fourth picture is projected.

With such a division and cyclic use of first and second digital storage device, great tolerance in respect of the picture rate in incoming picture signal is achieved. This is a great advantage when picture signals are transferred through data network where the transfer speed may vary greatly, and where picture data may get lost.

The picture from one projector is projected such that it can be viewed by one eye, and the picture from the other projector is projected such that it can be viewed by the other eye. In a preferred arrangement, picture from first and second projector is projected in registry on a screen by means of polarized light, and the pictures are viewed through spectacles having polarized glass, such as explained.

By means of the invention is achieved that each and every projected picture can be renewed in a cycle that only depends on the frequency with which the digital storage devices are scanned. Even if this may involve that the same picture is shown several times if incoming picture rate descends, a substantial reduction of flicker is obtained as compared with known technique where picture projection follows incoming picture rate.

A device for carrying out the described method is described in the following by means of two exemplary embodiments, and reference is made to attached drawings, wherein:

Figure 1 shows a simplified block scheme for a first embodiment of the invention;

Figure 2 shows a simplified block scheme for a second embodiment of the invention.

In figure 1, the reference numeral 1 denotes a right projector adapted to project a picture to be seen by right eye, in registry with a projected picture from a  
5 corresponding, left projector 2 projecting a picture to be seen by left eye.

Right projector 1 is coupled to and receives its picture signal from a right picture generator 3. Left projector 2 is  
10 coupled correspondingly to a left picture generator 4. Each picture generator 3, 4 is adapted to scan a picture storage and generate a picture signal causing the projector 1, 2 belonging thereto, to project a visible picture belonging thereto, on a screen.

15 Right picture generator 3 is adapted to scan periodically an area within a right picture storage 5, and left picture generator 4 is correspondingly adapted to scan periodically an area within a left picture storage 6. Right picture storage 5 is divided into a first right picture area 7 and a  
20 second right picture area 8. Left picture storage 6 is correspondingly divided into a first left picture area 9 and a second left picture area 10.

A right picture selector 11 is adapted to react on a control signal and connects, alternately, right picture generator 3  
25 to first or second picture area 7, 8 in right picture storage 5 and, thus, determines if right projector 1 projects a picture based on first or second picture area 7, 8. A left picture selector 12 is, correspondingly, adapted to react on a control signal, alternately connecting left picture

generator 4 to first or second picture area 9, 10 in left picture storage 6, thus determining if left projector 2 projects a picture based on first or second picture area 9, 10.

5 A right decoder 13 is adapted to receive a picture signal and store values representing the picture signal, in right picture storage 5 on a format which right picture generator 3 is adapted to convert to picture signals for right projector 1. A left decoder 14 is, correspondingly, adapted to receive  
10 a picture signal and store values representing the picture signal, in left picture storage 6 on a format which left picture generator 4 is adapted to convert into picture signals for left projector 2.

Between right decoder 13 and right picture storage 5, is  
15 disposed a right area selector 15 adapted to respond to a control signal, alternately connecting the decoder 13 to second or first picture area 8, 7 in right picture storage 5 and, thus, determine whether the decoder 13 stores values in second or first picture area 8, 7. Right picture selector 11  
20 and right area selector 15 alternate such that right picture generator 3 and right decoder 13 are coupled to opposite picture area 7, 8 in right picture storage 5. Intermediate left decoder 14 and left picture storage 6 is, correspondingly, disposed a left area selector 16 adapted to  
25 respond to a control signal, alternately connecting the decoder 14 to second or first picture area 10, 9 in left picture storage 6 and, thus, determine whether the decoder 14 is storing values in second or first picture area 10, 9. Left picture selector 12 and left area selector 16 alternate such  
30 that left picture generator 4 and left decoder 14 are coupled to opposite picture area 9, 10 in left picture storage 6.

A page selector 17 is adapted to respond to control signals and alternately connect a conductor 18 for an incoming picture signal to right decoder 13 or left decoder 14.

A controller 19 is adapted to sense the incoming picture  
5 signal and recognize signal values or signal codes defining a new picture and giving switching signals to the page selector 17 for each picture. Right decoder 13 is adapted to give switching signal to right area selector 15 and right picture selector 11 each and every time the decoder has stored a new  
10 picture in right picture storage 5. Left decoder 14 is adapted to give switching signal to left area selector 16 and left picture selector 12 each and every time the decoder has stored a new picture in right picture storage 6.

Each picture generator 3, 4 feeds new picture to right or  
15 left, respectively, projector 1, 2, following a fixed picture rate, e.g. sixty times per second, even if incoming picture rate varies. In lack of new picture information, the picture generators 3, 4 will repeat last picture.

The right picture selector may alternate while the right  
20 picture generator 3 is about transferring picture signals to the projector 1. Advantageously, the picture generator 3 may be formed with internal storage, not shown, having a capacity for one picture, only scanning right picture storage 5 each time it has completed the transfer of one picture to right  
25 projector 1. Thus, a projected picture consisting of parts from two pictures is avoided. Correspondingly, left picture selector 12 may come to alternate while left picture generator 4 is in the course of transferring picture signals to the projector 2. Advantageously, the picture generator 4  
30 may also be formed with internal storage, not shown, having a

capacity for one picture, only scanning left picture storage 6 each and every time it has completed to transfer a picture to left projector 2. Thus, a projected picture consisting of parts from two pictures is avoided.

- 5 A second and preferred embodiment of the invention is shown in figure 2, where the projectors 1, 2 are connected to a common picture storage 20 through a picture 11 selector and 12 of their own, respectively. Possible picture generator for each of the projectors 1, 2 is not shown, but it may be  
10 disposed correspondingly to the described one. The picture storage 20 is divided into four picture areas 21, 22, 23, 24. A controller 25 is adapted to read and store picture signal in the conductor 18 in the picture storage 20 one of the picture areas 21, 22, 23, 24 through an area selector 26.  
15 Pictures are stored in consecutive succession, so that first picture is stored in picture area 21, the next in 22 and so forth until all picture areas have been used. Next picture is stored in 21, and the process repeats itself, the picture storage 20 being organized as a ring buffer.
- 20 Through its picture selector 11, projector 1 reads a picture stored in picture area 21 or 23. Through its picture selector 12, projector 2 reads a picture stored in picture area 22 or 24. Thus, each projector 1, 2 reads every second picture from the picture storage 20.
- 25 The alternating cycle for the picture selectors 11 and 12 is adjusted such that the gathered projected picture becomes as free of flicker as possible. The picture cycle at each projector 1, 2 may e.g. be equal to half of the cycle in incoming pictures when it is lower than one predetermined  
30 value and, thereupon, restricted to an upper picture cycle if

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incoming picture cycle increases beyond the same. Typically, incoming picture cycle should be lower than 85 pictures per second cause a corresponding outgoing picture cycle. Above this limit, e.g. outgoing picture cycle may be halved.

- 5 Likewise, the picture cycle to each projector 1, 2 can be restricted to a minimum value, so that a stable picture is maintained at incoming picture signal which has an extremely low cycle.

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## A m e n d e d   C l a i m s

1. A method for stereo projection of pictures represented by a picture signal alternating cyclically between picture intended for right eye and picture intended for left eye, and wherein first and, thereupon, each odd number picture received, is transferred to a first projector (1), and second and, thereupon, each even number picture received, is transferred to second projector (2), c h a r a c t e r i z e d i n that picture signals for odd number pictures are decoded and stored in a first picture storage (5) which is scanned periodically and projected by first projector (1), and that picture signals for even number pictures are decoded and stored in a second picture storage (6) which is scanned periodically and projected by said second projector (2).
2. A device for stereo projection of pictures represented by a picture signal which alternates cyclically between picture intended for right eye and picture intended for left eye, c h a r a c t e r i z e d i n a page selector (17) adapted to transmit picture signals for first and, thereupon, each odd number picture to a first projector (1) and second and, thereupon, each even number picture to a second projector (2), and that said page selector (17) is assigned a control unit (19) adapted to sense the incoming picture signal and recognize signal values or signal codes indicating new picture and to transmit alternate to said page selector (17) for each picture.